AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (PREVIOUSLY PRESENTED) A method comprising:

illuminating a first surface of a wafer with radiation from a radiation source, wherein a second surface of the wafer opposite the first surface is positioned on a reflective support, the reflective support being a separate element from the wafer being illuminated;

receiving a signal that includes information germane to total reflectance of the radiation from the wafer;

comparing the information to information in a database; and determining one or more characteristics of the wafer based on the comparing wherein the one or more characteristics are selected from a group consisting of thickness and surface characteristics.

- 2. (ORIGINAL) The method of claim 1 wherein the database includes calculated information.
- 3. (ORIGINAL) The method of claim 1 wherein the database includes measured information.
- 4. (ORIGINAL) The method of claim 1 wherein the signal includes spectral information.
- 5. (ORIGINAL) The method of claim 1 wherein the database includes spectral information.
- 6. (ORIGINAL) The method of claim 1 wherein the database includes calculated spectral information.

- 7. (ORIGINAL) The method of claim 1 wherein the signal includes spectral information and further comprising selecting segments of the spectral information.
- 8. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer thicknesses.
- 9. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer surface characteristics.
- 10. (ORIGINAL) The method of claim 1 wherein the database includes spectral information for a variety of wafer thicknesses and a variety of wafer surface characteristics.
- 11. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a non-contact technique.
- 12. (ORIGINAL) The method of claim 1 wherein the signal is acquired using an optical technique.
- 13. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a non-contact, optical technique.
- 14. (ORIGINAL) The method of claim 1 wherein the receiving, the comparing and the determining occur in less than approximately 100 ms.
- 15. (ORIGINAL) The method of claim 1 wherein the determining comprises mapping characteristics of the wafer.
- 16. (ORIGINAL) The method of claim 1 wherein the one or more characteristics includes thickness of the wafer.

- 17. (ORIGINAL) The method of claim 1 wherein the one or more characteristics includes surface roughness of the wafer.
- 18. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a Sopori reflectometer.
- 19. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a PV reflectometer.
- 20. (ORIGINAL) The method of claim 1 wherein the surface characteristics of the wafer are known a priori.
- 21. (ORIGINAL) The method of claim 1 wherein the signal includes information pertaining to one or more surfaces of the wafer.
- 22. (ORIGINAL) The method of claim 1 wherein the signal includes information pertaining to one or more surfaces of the wafer and to one or more thicknesses of the wafer.
- 23. (ORIGINAL) The method of claim 1 wherein the wafer filters shorter wavelengths of incident radiation.
- 24. (ORIGINAL) The method of claim 1 wherein the comparing includes performing a regression analysis.
- 25. (ORIGINAL) The method of claim 24 wherein the performing a regression analysis yields a best fit.
- 26. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength.

- 27. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength within a range of wavelengths.
- 28. (ORIGINAL) The method of claim 27 wherein the range of wavelengths corresponds to a range associated with multiple internal reflections in the wafer.
- 29. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing wavelengths.
- 30. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing reflectances.
- 31. (ORIGINAL) The method of claim 1 wherein the comparing includes comparing wavelengths and reflectances.
- 32. (ORIGINAL) The method of claim 1 wherein the comparing includes selecting a total reflectance value.
- 33. (ORIGINAL) The method of claim 1 further comprising acquiring the signal.
- 34. (ORIGINAL) The method of claim 33 wherein the acquiring includes spectral acquisition.

CLAIMS 35 and 36 (CANCELED)

37. (ORIGINAL) The method of claim 33 wherein the acquiring includes positioning a narrow-band filter between the wafer and a detector to filter radiation emanating from the wafer.

- 38. (ORIGINAL) The method of claim 37 wherein the detector detects radiation having amplitude inversely proportional to thickness of the wafer.
- 39. (ORIGINAL) The method of claim 1 further comprising generating an image of the wafer.
- 40. (ORIGINAL) The method of claim 1 wherein the signal is acquired using a reciprocal approach.

CLAIMS 41-58 (CANCELED)

59. (PREVIOUSLY PRESENTED) A method comprising:

positioning a thin wafer on a support, wherein the support has a layer of reflecting material abutting a lower surface of the thin wafer;

identifying for the thin wafer a moderately absorbing region of wavelengths of radiation:

using a reflectometer to illuminate an upper surface of the thin wafer with radiation having one or more wavelengths corresponding to the moderately absorbing region;

measuring total reflectance of the thin wafer; and

comparing the total reflectance to reflectance information for a plurality of wafers stored in a database in memory; and

determining a thickness of the thin wafer based on the comparing.

- 60. (CANCELED)
- 61. (PREVIOUSLY PRESENTED) The method of claim 59, wherein the reflective support is an aluminum reflecting support.
 - 62. (CANCELED)

- 63. (PREVIOUSLY PRESENTED) The method of claim 59, wherein the reflectometer comprises two or more radiation sources and wherein substantially all of the surface of the thin wafer is illuminated.
- 64. (PREVIOUSLY PRESENTED) A method of determining characteristics of a wafer, comprising:

illuminating the wafer with radiation from one or more radiation sources, whereby substantially all of an upper external surface of the wafer is illuminated, wherein the wafer is positioned with a lower external surface abutting a reflecting surface of a support platform that is a separate component from the wafer;

measuring a reflectance of the radiation from the wafer, wherein the illuminating and measuring are performed without contacting the upper external surface;

comparing the reflectance to reflectance information stored for a plurality of wafers in memory;

determining at least one of thickness of the wafer and surface characteristics of the wafer based on the comparing, wherein the comparing includes selecting a total reflectance value and correlating the selected value to a wavelength within a range of wavelengths.

65. (CANCELED)

- 66. (PREVIOUSLY PRESENTED) The method of claim 64, wherein the range of wavelengths is selected to correspond with a region of moderate absorbancy of radiation for the wafer.
- 67. (PREVIOUSLY PRESENTED) The method of claim 1, wherein the illuminating is performed using radiation at a wavelength corresponding to a moderately absorbing region of the wafer.